

## LOGISTICS SUPPORTING FOCUS AREA

### Background

The Marine Corps has not been isolated from a sustainment base or distribution channel for thirty or more consecutive days since Guadalcanal. Yet, we continue to foster an “iron mountain” approach to sustainment and accompanying supplies with a corresponding distribution bottleneck to logistics support.

This approach creates an exploitable vulnerability both in the rear area and the vital distribution routes, creates a brake on operational tempo, and is counter to our future concepts for Ship to Objective Maneuver (STOM). There are a number of efforts designed to improve logistics at the national and theater levels, and within the Marine Corps. The 2003 *USMC Logistics Campaign Plan* identifies some of the service specific goals and the organization tasked to oversee this goal.

### The Legacy *CSS Enterprise*

From the beginning of the Warrior Series of experiments, the Lab has supported Combat Service Support experimentation initiatives. The Lab’s Combat Service Support (CSS) focus has followed three simultaneous experimentation paths.

The primary path has been that of supporting an operational Force Service Support Group (FSSG) in applying available off-the-shelf technologies to new organizational approaches of supporting the ground combat element in widely dispersed maneuver operations.

Beginning with 1<sup>st</sup> FSSG during *Hunter Warrior*, the Lab provided limited funding support for the establishment of an experimental Combat Service Support Element (CSSE) organized around information technologies under the title of *CSS Enterprise*.

During *Urban Warrior*, 2<sup>nd</sup> FSSG followed a similar path in organizing an experimental CSSE as *CSS Enterprise—the Next Generation* with a similar goal tailored for the urban environment. These two efforts led directly to a number of CSS initiatives, one of which was the Small Unit Logistics Advanced Concept Technology Demonstration (SUL ACTD).

The second major approach was the pursuit of organizational concepts and the development of tactics, techniques, and procedures (TTPs) for small unit logistics support in the close battle – specifically the urban battlefield – but with implications to the tactical support of ground combat elements in general.

The third effort is the operational evaluation of new technologies and prototypical equipment with the operating forces in support of Office of Naval Research (ONR) Future Naval Capabilities and Marine Corps Systems Command program managers. Operator assessment has proven to be a successful method of assisting in determining operational priorities for systems acquisition and in developing operational procedures for implementing new technologies by the operating forces.

**Organizational Approach** – The Lab generally supports a customer in organizing operational experimentation with new technologies, TTPs, and organizations. Typical CSS initiatives are evaluated in limited technical assessments (LTAs) or introduced into the operating forces for sustained operator assessment leading to

incorporation into a major Marine Corps or Joint experiment in which the CSS initiative supports an experimental concept.

### Joint High Speed Vessel

The Lab has the lead for the Marine Corps experimentation effort with the Joint High Speed Vessel (HSV) prototype. During FY 2002, experimentation to explore Amphibious Task Force interoperability, intra-theater delivery of selected equipment, and the role of the HSV as a critical piece of the seabase was explored. This was accomplished through wargames and field experimentation with the operating forces and joint experimentation. Experimentation during FY



03 has been put on hold as the Joint Venture has been deployed in support of on-going real world

operations. Scheduled experimentation included participation in the TRI MEF MPF Exercise, WHEAT/RRDF interoperability and work with EUROM in the spring. Focus is now on design of X2 as it is being built in the yard in Australia. The schedule for X2 is still being worked. Currently, the first USMC experimentation with X2 will take place during DESTINED GLORY during October of 2003.

### Combat Service Support C2

This effort will develop training programs of instruction, standard operating procedures and staff tactics, techniques and procedures needed to command and control mobile combat service support detachments supporting a STOM operation. This is an initiative very closely tied to the FY 04 AWE, Sea Viking, which the Lab is sponsoring. Part of this effort is on-going work with the

CSSE advocate on the Ground Logistics Command and Control effort. This effort is software that provides the MAGTF with automated logistics planning and execution tools that will complement and be interoperable with current and emerging MAGTF, Naval, and Joint C2 processes and systems. This will NOT be a separate C2 capability, but will be the logistics/CSS component of the overarching MAGTF C2 capability and a feeder to the MAGTF's Common Operating Picture

### Health Service

Taking care of Marines is more than just a hollow phrase for Marine commanders and our Navy counterparts. MCWL is currently working closely with Defense Advanced Research Projects Agency (DARPA), Marine Corps Systems Command (MCSC) and Marine Corps Combat Development Command (MCCDC) on projects relating to improving medical care for Marines. These projects include enhanced first aid, enroute care system, advanced homeostasis application, a tactical medical coordination system and the health effects of enhanced blast munitions. The results of this work will result in recommended Doctrine, Organization, Training, Material, Leadership, Personnel and Facilities (DOTMPLF) changes. There is also a medical modeling and simulation effort being worked at the Lab.

### Forward Area Self Contained Transportable Bulk Liquid (FAST)

In 1996 the USMC realized the need for supplemental fuel carrying capacity on its M1A1 tanks and other armored vehicles. The 55-gallon FLEXCEL met short-term goals but requirements matured and called for a system that would require no external pump or pressure requirements. FAST is a means in

which to package fuel into configurations that support emergent fuel requirements under expeditionary forward operating conditions.

The objective of the FAST system is two-fold: 1) to provide forward operating units with emergent fuel and 2) to supplement current capabilities in the transfer of fuel and other bulk liquids from the sea base to designated points ashore.



## Lightweight Water Purification System

This project entails performing a market survey of commercially available LWP systems and performing an evaluation of those systems. The evaluation will be set into



two phases: the first phase will be conducted by Seawater Desalination Test Facility

(SDTF) staff members at NFESC while the second phase will be conducted by the Lab with selected Engineer personnel (Marines) at a location yet to be determined. During the testing phase, data will be gathered to evaluate a system's operational characteristics so a "functional" life cycle cost estimate can be created for each design.

## Mine Counter Measures

Mine warfare poses perhaps the most significant challenge to the Navy/Marine Corps team's ability to conduct EMW -- from the stern gate, over the water, across the beach, and to the objectives ashore. The Marine Corps depends upon the Navy to field

the family of systems required to detect and avoid or breach Very Shallow Water (VSW), Surf Zone (SZ) and Beach Zone (BZ) mines and obstacles. Marine forces crossing a beach must be delivered on or beyond the beach in a manner that allows deployment and subsequent movement ashore. Once ashore, the Marine Corps has a requirement to enhance the MAGTF's survivability and to ensure the MAGTF's mobility through mines and obstacles employed individually or as part of an integrated defensive barrier plan. The Marine Corps' current



ground MCM capability is not adequate to meet the MAGTF's mobility requirements. The capability gaps are several, spanning the MCM capability spectrum: detect, breach, clear, proof, mark, and information dissemination. The purpose of this Lab effort is three fold: The immediate effort is to develop a MAGTF Mine Counter Measures (MCM) Capability Set for contingency purposes. A near term effort is to conduct experimentation of route and area clearance items, e.g. medium and heavy flails. The far term effort is to coordinate with ONR 353 to develop improved expeditionary route clearance capabilities.

## MAGTF Utility Tractor, Tactical

Recent lessons learned from Operation Enduring Freedom (OEF) have included a lack of Material Handling Equipment (MHE) for the purpose of Rapid Runway Repair (RRR)/Airfield Damage Repair (ADR) and basic field fortification and rapidly constructed revetments. MHE in support of STOM evolutions must be small enough in size for CH-53E transportability, yet durable and rated with an operating capacity to

support Forward Operating Bases (FOBs) during contingency operations. During FY03, the Lab will be engaged with the engineer community/engineer advocate in the assessment of military utility of small, multi-use, utility tractors in support of the Marine Air Ground Task Force (MAGTF).



## Modeling and Simulation Tools

The Marine Corps needs computer tools to permit near real time course of action analysis and computer assisted tracking of changes in logistics databases. Both Joint and Service future operational concepts are based on the integration of the theater logistics inventory, the sea echelons logistics capability, and the Marine Air Ground Task Force's (MAGTF) requirements, into a single logistics picture that can support distributed, collaborative planning and execution.

A means to coordinate and monitor the on-going actions in all three distinct, simultaneous cycles – theater inventory, the requirements of the MAGTF, and the planning cycle of the naval task force – is essential to near real time course of action assessment and adaptive planning.

These tools are the next step in providing the decision support systems necessary to integrate operations and logistics such that the decision making process can support rapid, decisive planning, and execution of complex schemes of maneuver on a widely dispersed future battlespace.

During the first quarter of FY 2002, the Lab supported ONR in experimenting with a decision support system that enables adaptive planning and execution. This experimentation, in partnership with the

Naval Warfighting Doctrine Command was a limited objective experiment (LOE) involving an intelligent agent prototype decision support system funded by ONR called SEAWAY and a companion ONR funded MAGTF proof of concept system called LOGGY.

Based on the results of this LOE and strong support from the operating forces,

SEAWAY/LOGGY version 2 was funded with a completion date of fall of 2003. A key element

of version 2 is the capability to develop a nine-day Extended Planning Outlook. Once a commander knows what logistic support is required in order to execute several periods of operations he can then compare it to what stocks he has on hand and what is quickly available from nearby bases, he can identify the delta he still needs and request these critical stocks, he can examine whether the helicopter and LCAC assets he has been assigned are adequate to his projected mission, and he can determine other planning and execution requirements.

